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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/482,060	01/13/2000	David P. Wieczorek	051252-5029	6503

9629 7590 06/13/2002

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EXAMINER

KIM, CHRISTOPHER S

ART UNIT PAPER NUMBER

3752

DATE MAILED: 06/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/482,060

Applicant(s)

WIECZOREK ET AL.

Examiner

Christopher S. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 10-19 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) 21-23 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-19 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13. 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-5 and 10-19 are, drawn to an apparatus, classified in class 239, subclass 497.
 - II. Claims 21-23 are, drawn to a method, classified in class 239, subclass 5.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions II and I are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process which does not require a body passage having an average cross-sectional area less than 2.25 times the substantially uniform cross-sectional area of the needle.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Khoi Q. Ta on June 7, 2002 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-5 and 10-19. Affirmation of this election must be made by applicant in replying to this Office

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action. Claims 21-23 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Response to Amendment

6. Amendment filed May 6, 2002 is acknowledged.

7. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Priority

1. Claims 3-5 and 10-19 have not been granted the benefit of the earlier filing date of priority documents since the claimed subject matter is not fully disclosed therein.

Drawings

8. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "at least one slot extending tangentially from the at least one fuel passage opening to the central

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aperture" recited in claim 10 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

9. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: a guide member and a flat disk recited in claims 1 and 3.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. Claims 3-5 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 3 recites "at least one flat disk". The specification as originally filed is enabling for only one flat disk. There disclosure does not provide a teaching for a plurality of flat disks.

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Claim Rejections - 35 USC § 103

12. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daley et al. (4,971,254).

With respect to claim 1, Daley et al. discloses a fuel injector having a fuel inlet 14; a fuel outlet 12; a body 10; an armature (inherent); a cylindrical needle 16; a seat 20; a swirl generator 18. Daley et al. does not disclose the swirl generator having a guiding member contiguous to a flat disk. Forming the swirl generator of two elements (such as the disc member 22 and retainer member 24 of Daley et al.) is a mere separation of parts. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the swirl generator of Daley et al. from two elements (two flat disk like elements) to ease manufacturing, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

The function recitation "when the body is exposed to operating temperatures of a cylinder of an engine" is not a positively cited limitation which only requires the ability to so perform. As applicant has clarified in the response filed on October 5, 2001, applicant is not claiming a cylinder of an engine.

Daly et al. is silent as to being a direct or indirect fuel injector. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have applied the teachings of Daly et al. to a direct injection fuel injector to increase the divergence of the column of fuel.

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With respect to claim 2, Daly et al. discloses the limitations of the claimed invention with the exception of the range of the inner and outer diameter of the cylindrical annulus. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have made the inner diameter of the cylindrical annulus no more than 50% greater than the diameter of the cylindrical needle and the outer diameter of the cylindrical annulus no less than 100% greater than the inner diameter of the cylindrical annulus, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

13. Claims 3-5 (as best understood) are rejected under 35 U.S.C. 103(a) as being unpatentable over Wieczorek (4,967,959) in view of Muller et al. (6,145,761).

With respect to claims 3-5, Wieczorek discloses a fuel injector (also see Hensley, US Patent 4,610,080 per Wieczorek column 1, lines 61-62) comprising: a body 24 (4,610,080); an armature 26 (4,610,080); a cylindrical needle 12; a seat 14; a first surface 22, a second surface (external bottom of seat member 14), and a cut-out configuration 34. Wieczorek discloses a guide member 26 but does not disclose a swirl generator.

Muller et al. disclose a direct injection fuel injector comprising a swirl generator having a guide member 35 contiguous to a flat disk 47. It would have been obvious to a person having ordinary skill in the art at the time of the invention to have replaced the guide member of Wieczorek with the swirl generator/guide member of Muller et al. to increase the divergence of the column of fuel.

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The function recitation "when the body is exposed to operating temperatures of a cylinder of an engine" is not a positively cited limitation which only requires the ability to so perform. As applicant has clarified in the response filed on October 5, 2001, applicant is not claiming a cylinder of an engine.

Allowable Subject Matter

14. Claims 10-19 are allowed.

Response to Arguments

15. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

16. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

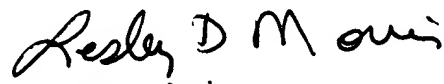
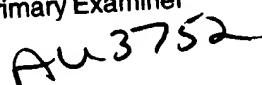
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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (703) 308-8336. The examiner can normally be reached on Monday - Thursday, 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry C. Yuen can be reached on (703) 308-1946. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7766 for regular communications and (703) 308-7766 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.


Lesley D. Morris
Primary Examiner


CK
June 9, 2002